

LETTERS TO THE EDITOR.

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The Systematic Position of *Mœritherium*.

PERHAPS of all the groups of mammals at present existing, no two are more dissimilar in general form than the Proboscidea and the Sirenia, but, nevertheless, the suggestion made long ago by de Blainville, that these animals are nearly related, has of late years been shown to be almost certainly correct, the discovery of early members of both groups in the Lower Tertiary beds of Egypt having to a great extent bridged the gap between the two orders. The animal that perhaps most nearly approaches the ancestral type of the two groups is *Mœritherium*, which, however, has hitherto been regarded as already far advanced along the proboscidean line, and if not directly ancestral to the undoubted primitive elephant *Palæomastodon*, at least closely related to its ancestor, and representing a stage of evolution through which it must have passed.

In an article "On the Feeding Habits of *Mœritherium* and *Palæomastodon*," published in NATURE of July 29, Prof. H. F. Osborn seems to dissent from this view to some extent, to emphasise the Sirenian characters of *Mœritherium*, and to regard it rather as a belated Sirenian which had not undergone the specialisation for a purely aquatic life already attained by some Sirenians contemporary with, or even earlier than, it. Prof. Osborn to a large extent bases his conclusions on peculiarities shown in some more or less conjectural restorations of the heads of *Mœritherium* and *Palæomastodon*, his chief reasons for the separation of *Mœritherium* from the Proboscidea being (1) the small size and high anterior position of the eyes and the high position of the ears, both said to be characteristic of the Sirenia; (2) the difference in the arrangement of the anterior teeth and mouth-parts from that found in *Palæomastodon*.

As to the characters of the eyes and ears, they seem to be purely adaptive, and are simply the result of the admittedly semi-aquatic habits of *Mœritherium*, and would not be expected to exist in purely terrestrial members of the group. The apparent height of the ears is, moreover, mainly the consequence of the small development of the occipital region of the skull compared with that found in the heavier-headed *Palæomastodon*. As to the arrangement of the jaws and the anterior teeth, it seems to represent exactly such a stage as a mammal with the normal Eutherian dentition would be expected to pass through before attaining the condition found in *Palæomastodon*. Certainly the anterior dentition of *Mœritherium* is quite unlike that of any known Sirenian; thus in *Eosiren*, a contemporary of *Mœritherium*, it is the first pair of upper incisors, not the second, that is enlarged, while the other incisors and the canine are already in a fair way to the complete disappearance characteristic of the later Sirenia. In the lower jaw the differences are greater still, *Eosiren* possessing the strongly deflected symphysis probably already partly covered with a horny plate, and in which the incisors are undergoing reduction; in *Mœritherium*, on the other hand, there is no deflection of the symphysis, and the first pair of incisors is small, while the second form large procumbent tusks, very similar to those found in many primitive Proboscidea. *Mœritherium* is further distinguished from the contemporary and even earlier Sirenians by the possession of a well-developed pelvis, which was supported by a strong sacrum composed of three fused vertebrae. The hind limb is, unfortunately, not completely known, but the femur was large and straight, being similar in many respects to that of *Palæomastodon*. In several other ways, also, *Mœritherium* differs from the Sirenia and approaches the Proboscidea; thus the position of the auditory meatus with reference to the zygomatic process of the squamosal and to the neighbouring bones is as in *Palæomastodon*, and quite unlike what is seen in the Sirenia. Again, the cervical vertebrae,

though short, show no traces of the extreme shortening already present in *Eosiren*.

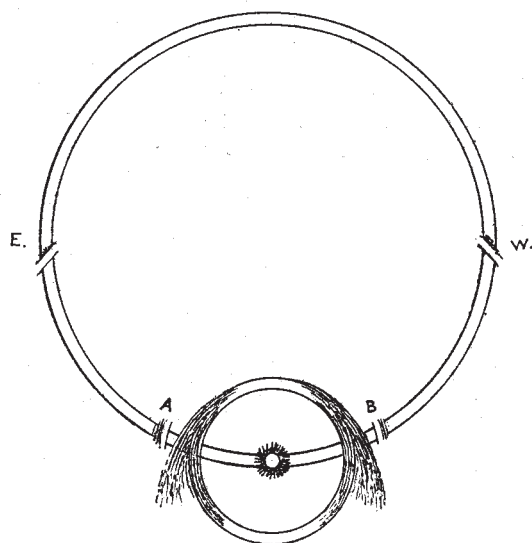
Another argument in favour of the relationship of *Mœritherium* to *Palæomastodon* is the existence of forms like *Mœritherium trigonodon* and *Palæomastodon minor*, which, though unfortunately at present very imperfectly known, appear, both in their size and in some respects in their tooth structure, to be annectant forms.

On the whole, it seems that the weight of evidence is in favour of regarding *Mœritherium* as a proboscidean, though perhaps not on the direct line of ancestry of *Palæomastodon*, and retaining some characters of the original Proboscideo-Sirenian stock.

CHAS. W. ANDREWS.

Remarkable Halo of August 21.

THE accompanying diagram is a sketch of the Danzig phenomenon as observed at Blackpool on Saturday, August 21, between 11.45 a.m. and 0.30 p.m. There had been heavy rain and stormy winds on the previous night and in the early morning up to 10 a.m. At 11.45 a.m. thunder cloud and cumulus extended all around the horizon, but in the vicinity of the zenith, where the 22° halo and the western portion of the mock sun ring now appeared, there was no trace of cirrus or other cloud form, although a very pale milky tint might be discerned.



At noon the sky was overcast, but by 0.25 p.m. it was again clear at the zenith, and the complete phenomenon stood out very prominently, the 22° halo very vivid and brilliant with what would appear to be its arc of upper contact, the mock sun ring being very clear and of a silvery hue, and the mock suns; the two furthest from the real sun being apparently at the intersection of the mock sun ring with the 90° halo. This halo, however, was nowhere else visible.

There was nothing like an image of the sun at the N. point of the 22° halo; but this was a position of very great brilliancy, with the usual reddish colouring on the edge nearest the sun and the gradual shading off outwards to a bluish-white. The S. point was also a position of maximum brightness, though less intense than the N. point, while the E. and W. portions of the halo were fainter and untinted, but quite discernible.

The two nearer mock suns at A and B likewise could hardly be called images of the sun, but resembled the N. point of the 22° halo, as though they were the intersections in the mock sun ring of another halo, nowhere else visible, of about 33° radius. They were thus somewhat elongated, projecting slightly on either side of the ring. The two further mock suns were of a similar character, but with no colour.

Some special peculiarities seem to have been:—(1) The absence of cloud in the region of observation where the

phenomenon was at its brightest. (2) The complete continuity of the mock sun ring, the portion within the 22° halo being quite distinct. (3) The fact that the arc of upper contact had its *concave* side towards the sun, and extended for more than 90° on either side of the point of contact, gradually growing more diffuse and faint. This seems to be quite a special characteristic. (4) The peculiar shape of the mock suns and the positions of the two nearer the sun. These were not on the 22° halo, but outside the arc of upper contact, as shown in the sketch, the arc bisecting the distances measured along the ring between the mock suns and the halo.

At 0.30 p.m. the sky again became overcast, nor could any trace of the phenomenon be seen afterwards. In the afternoon and evening the wind was very cold, and there was a fair amount of cloud, but on the whole it was fine and sunny. The night, however, was wet and stormy.

W. McKEON.

Stonyhurst College Observatory, August 30.

Man and Environment.

I AM under the impression that it is recorded somewhere that Darwin expressed the following opinion:—He considered the fact that when man appears he appears, not as a "blind" subject of his environments, but with power to determine largely, not only his own environments, but those of generations of men succeeding his own generation; and, faced by this fact, he expressed a doubt whether, when man appears, some new factor may not come into play in "natural selection" (cf. "The Descent of Man," 2nd ed., p. 613, lines 15 to end of paragraph). But I cannot find the reference. Could any reader of NATURE assist me?

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THE ATTAINMENT OF THE NORTH POLE.

DURING the past week great attention has been given to the announcement on September 1 that Dr. F. A. Cook had returned from north polar regions, having reached the North Pole on April 21, 1908. The interest excited by this statement has since been increased by a message, dated September 6, received at New York from Commander Peary, reporting that he reached the pole on April 6, 1909.

Commander Peary departed for the north from Sydney, Cape Breton, on July 17, 1908, his intention being to proceed by the Smith Sound route to his winter quarters on the northern shore of Grant Land. He hoped to start for the pole with fully-loaded sledges from the "Big head" he encountered in the Polar Ocean in 1906, to the north of Grant Land, in about latitude 84° N. The last information concerning him indicated that in the middle of August last year his ship, the *Roosevelt*, was continuing her voyage northwards from Etah, the expedition's base of supplies on Smith Sound. He took sounding apparatus with him, with the intention of obtaining a line of soundings from Grant Land to the pole. When he left last year he stated that, should he reach the pole, news of his success might be expected between August 15 and September 15, and the message received on September 6 has justified his expectations.

It is difficult yet to arrive at a satisfactory opinion as to the value of the observations from which the explorers conclude that they reached the North Pole, but as both Dr. Cook and Commander Peary are responsible travellers, it must be assumed that they realise the difficulty of determining the position of the pole, and took the necessary precautions to establish the validity of their claims. We have no right to doubt their statements, but the publication of the observations at an early date is greatly to be desired, so that the matter can be placed beyond question. In the case of Commander Peary, his previous work in Arctic regions is so well known that geographers

have accepted his announcement without hesitation, and a congratulatory message has been sent to him by the Royal Geographical Society. On the occasion of his previous expedition in 1906, he approached to within two hundred miles of the pole, and there was every reason to anticipate that this year he would reach the pole itself. His plans were known, and his long experience of Arctic conditions justified confidence in their successful accomplishment. There has, however, been much discussion upon Dr. Cook's journey and achievement, and as he claims to have reached the North Pole nearly a year before Commander Peary, it is of interest to give a few particulars relating to him and his expedition.

Dr. Cook is an American medical man, with varied experience of exploring work in both the Arctic and Antarctic regions. He served as surgeon on Commander Peary's second expedition to West Greenland in 1891, and was a member of the Belgian Antarctic expedition under Commander De Gerlache, which spent the Antarctic winter of 1898 drifting about on board the *Belgica* in the ice-covered seas to the southwest of Graham Land. Both in 1903 and 1906 Dr. Cook conducted expeditions to Alaska, with the object of achieving the ascent of Mount McKinley, 20,390 feet high, the loftiest mountain on the North American Continent, and after repeated failures reported that he had succeeded in reaching the summit. Two years ago it was announced that he was desirous of organising an expedition to the South Pole, and it came as a surprise to most people to learn in the autumn of 1907 that he was encamped at Etah, on the north-west coast of Greenland, and proposed to make a "dash" for the North Pole.

Briefly, Dr. Cook's story is that he left his base at Etah on February 19 of last year, accompanied only by a force of Eskimos, and dogs for pulling the sledges. The route varied slightly from that adopted by Commander Peary. Dr. Cook struck westwards across Smith Sound to Ellesmere Land, and continued westwards across that island to Nansen Sound, which separates Ellesmere Land from Axel Heiberg Land, one of the new lands discovered by the Sverdrup expedition on board the *Fram* in 1898-1902. From Cape Hubbard, the northernmost point of Axel Heiberg Land, Dr. Cook pushed out over the polar ice on March 18. Three days later the last of the supporting parties returned, and Dr. Cook continued his march to the pole with only a couple of Eskimos. Between the 84th and 85th parallels of north latitude, he sighted land to the west, but "the urgent need of rapid advance on our main mission did not permit a detour to explore the coast." This, continues Dr. Cook, in the narrative which he has supplied to the *New York Herald*, was the last sign of solid earth seen on the northward march, though, "from the 87th to the 88th parallel much surprise was caused by an indication of land ice. For two days we travelled over ice which resembled a glacial surface. . . . There was, however, no perceptible elevation, and no positive sign of land or sea." Farther north, Dr. Cook says, "signs of land were still seen every day, but they were deceptive illusions, or a mere verdict of fancy. . . . The mirages turned things topsy-turvy, inverted mountains, and queer objects even rose and fell in shrouds of mystery; but all of this was due to the atmospheric magic of the mid-night sun."

Finally, to quote the words used by Dr. Cook on September 7, in a lecture to the Royal Geographical Society of Denmark:—"On April 21 my observation gave $89^\circ 59' 40''$ —that is, $20''$ from the pole. We advanced the $20''$ and I made another observation, and several others that day and the next. I think there is no doubt that these observations will prove that we